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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/842,203	04/26/2001	Maurits van der Schaar	P 280250 P-0181.010-US	5405

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EXAMINER

ESPLIN, DAVID B

ART UNIT PAPER NUMBER

2851

DATE MAILED: 04/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/842,203

Applicant(s)

VAN DER SCHAAR ET AL 

Examiner

D. Ben Esplin

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 14-17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-9 is/are allowed.
- 6) ☒ Claim(s) 1,2,10-13 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, and 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,862,008 to Oshida et al.

FIG. 4A shows a lithographic projection apparatus including a radiation system (exposure light source 4), a beam patterning structure, or mask (reticle 1), supported by a support structure, or mask stage (reticle stage)(col. 14 lines 36-40), a substrate (wafer 2) arranged on a substrate table (wafer stage)(col. 14 lines 36-42), a projection system (reduction lens 3), and an alignment system including an excitation source for producing electromagnetic radiation (reference light 501') to a surface of the substrate to induce a wave in a region of a buried substrate alignment mark (see FIG. 14A and col. 11 lines 34+), and a measurement system to direct a measurement beam (reflected laser light 514). As can be seen in the drawings, the radiation from the excitation source is shaped so as to allow the radiation to be incident on the substrate at a plurality of angles and the measurement system detects the radiation coming off of the substrate in order to generate thickness data relating to the thickness of a layer of photoresist covering the alignment mark (col. 9 lines 35+).

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,285,455 to Shiraishi.

FIGS. 1(a)-(b) of Shiraishi shows a lithographic projection apparatus including a radiation system (illuminating optical system 1), a support structure (reticle stage 2), a substrate table (workpiece table 5) for holding a substrate (wafer 4), a projection system (projection lens PL), and an alignment system including an excitation source (laser beam L1) and a measurement system (including photoelectric detector 16) for detecting a buried alignment mark (alignment mark 26) that is buried by a process layer (polysilicon film 27).

Allowable Subject Matter

Claims 3-9 are allowed.

The following is an examiner's statement of reasons for allowance:

A lithographic projection apparatus including an excitation source arranged to induce an acoustic wave in a covering layer of an alignment mark, or an excitation source arranged to induce a thermal wave in a covering layer of an alignment mark, along with the rest of the structure and function found in these claims, is not taught in the prior art.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments filed 4/3/03 have been considered and have been found to be unpersuasive.

Applicant has argued that FIG. 14A does not show a buried alignment mark. However, Examiner holds that the figure clearly shows an alignment mark covered by a resist layer (43) that is detected by the alignment system shown in FIG. 4. This coverage of the alignment mark would meet the claim limitation of an "at least partially buried" alignment mark. Since Applicant has not shown that the alignment mark of FIG. 14A is not covered, and has not pointed out a different definition of alignment mark burial in the specification that would distinguish the claim language over the prior art applied, the rejection is upheld by the Examiner.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,320,242 to Takasu et al. discloses a semiconductor device including an alignment mark that is buried by a process layer.

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THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. Ben Esplin whose telephone number is (703) 305-4022. The examiner can normally be reached on Mon.-Fri. (8am-4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell E. Adams can be reached on (703) 308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



DBE

April 16, 2003



RUSSELL ADAMS
SUPERVISORY PATENT EXAMINER
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